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Kant's Inaugural Dissertation and Early Writings on Space

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THE JOURNAL OF PHILOSOPHY

THE STATUS OF THE DATA OF EXPERIENCE

THE object of this article is to set forth briefly the essential principles of critical method and to use the same as a basis for criticizing Professor Drake's theory of the status of the data of experience. My aim shall be not merely to make the article as a whole a criticism, but to use the criticism as a defense of the method used as its basis. In order to accomplish such a goal, I shall endeavor to show that the position criticized really implies the main principles of the method used to criticize it and is, therefore, self-contradictory in so far as it reaches conclusions in conflict with these principles. The successful use of the method in this way will be considered as a conclusive proof that the method does set forth the necessary principles of knowledge, inasmuch as it shows that any theory does, in fact, imply the same, although it reaches conclusions which do not agree with these principles.

The function of critical method is to determine the essential principles of experience and knowledge. The first principle concerns the nature and status of the datum of experience. Conscious experience presupposes a given existence as a primary and ultimate reality for consciousness which can not be reduced to anything else. The very nature and function of a datum makes it impossible for it to have any other status than what it has as immediately given because such a status would be an ontological status and not its immediately given status as datum. The latter status can not be attributed to the datum as immediately given.

The relation of the data to objective reality involves a second principle of knowledge, for it raises the question of the means by which knowledge can transcend its datum, or what is immediately known. This principle is a matter of the relation of given reality to a postulated reality not given. Such a relation is not a given reality, but is an assumed or postulated relation made on the basis of given relations the same as the postulate of an objective reality not given. In the nature of the case, such a postulate is an hypothesis whose validity must be tested indirectly by the given reality.

The relation of these principles is such that neither one can have the ontological status and function in experience that the other has. Only what is immediately given to consciousness can have the function of a datum. Therefore a reality as datum can have only the status of given existence. The function of an ontological explanation, on the other hand, is to postulate an objective reality not

immediately given in order to account for the given. Therefore, such a postulated objective reality can not have the given status of a datum. Each of these functions presupposes the other as a function and status exclusive of itself. An existence, in its function as datum, can have no other status than its given existence. In order to perform its function as an objective explanation, it must have a status that transcends the datum. The two functions and corresponding stata can never be identified. No theory can identify the two in the same object. Even if both are attributed to the same object, they constitute two different states of the same object because their functions can not be identified.

The only basis on which an objective existence can be postulated of the datum is by assuming a relation of identity between the given datum and objective reality. Such an assumption makes objective reality a datum of consciousness. This position solves the problem of the ontological status of the datum on a monistic principle which identifies given existence and objective existence.

In his criticism of pan-objectivism, Professor Drake rejects the relation of identity as a sufficient principle of ontological explanation.[1] He contends that the whole content of given experience can not be identified with objective reality. With the rejection of the relation of identity between the datum and objective reality, it is necessary for critical method to replace the monistic solution of the ontological problem by a dualistic hypothesis which does not identify reality as it is given in consciousness with its objective existence. Its task is to secure an hypothesis which will make it possible to account for the existence of qualities in reality as given which do not belong to reality as it exists objectively. For this hypothesis it is necessary to assume a relation between given reality and objective reality which will allow for a difference in the nature of the two, but which also presupposes a difference in existence in order to permit a difference in quality. A critical solution of the ontological problem thus requires that there be an assumption of a relation of identity and difference between objective reality and reality as given.

The purpose and function of an ontological hypothesis is to account for the datum of experience which is the only reality immediately known. The hypothesis must meet the requirements of both principles of knowledge. These requirements are, a given order of existence, an objective ground or order of existence, and a relation between the two which will make it possible to account for the given order by means of the objective one. A critical hypothesis on a dualistic basis which does not identify the two orders must

[1] *Mind and Its Place In Nature*, pp. 6, 7, 14.

assume two orders of existence. The one is the given order of existence, or datum of experience. The other is the objective world as it exists for itself. The first order fulfills the conditions and function of a datum. It is a reality immediately given to consciousness. It is directly known just as it exists and can have no other reality or existence because it is only a given existence. Any other existence would not be a given existence, but a self-existence. For this reason the existence of the given order must be accounted for by assuming an objective order which exists independently of consciousness.

The relation between these two orders must be one which will hold between the different kinds of existence involved. The relation between the two orders as existences is the basis of the postulated existence of the objective order. It is a causal relation between the given order as effect and the postulated objective order as ground. The assumption of an objective order which can produce a given order is the essential condition of the hypothesis itself. There must also be a relation of similarity or epistemological relation between the two orders as well as an existential or ontological relation. This is necessary in order that the postulated order may serve to explain the structure of the given order and not remain a bare unknown ground of its existence. Science has found the spatial character of the given order to be the only one that will serve this purpose. In order to account for the spatial structure of the given order and other qualities, it attributes a similar spatial character to the objective order. The two orders are thus a given spatial order, which also has secondary qualities, and an objective spatial order not given to consciousness. The spatial character of the two orders is not identical in existence because one is a given spatial order and the other a self-existing one. The identity between the two orders is not a matter of existence, but an identity in spatial character between two different types of existence.

The greatest significance for critical method of the substitution of the principle of identity in difference for that of identity is that such a principle implies an essentially different conception of the nature of both consciousness and its immediate content or datum. For this reason it is impossible to formulate consistently any hypothesis which attempts to combine these principles in such a way as to include the objects of veridical perception as members of one objective order, while regarding other objects or qualities as existing only in the mind, or for consciousness. The inconsistency in the hypothesis lies in the attempt to combine two different conceptions of the nature of perception or consciousness, instead of adopting a view of perception which will account for the difference attributed

to the two perceptions. The mistake is in supposing that the perceptions, as such, are different in nature. The logical requirements of the situation call for an hypothesis which will give consciousness and its objects the same character in all cases. Consciousness can not be a direct awareness of objective reality in one case and an awareness of an object in the mind in the other case. The conception of consciousness implied by the principle of identity in the first case is that of an intuitive awareness of external space and objects existing in it. In the other case, consciousness will still be an intuitive awareness of a spatial world, but it will be only a given one having existence for consciousness. It is by such a conception alone that we can account for a given or perceived object which does not have objective existence. Its difference from other objects will not be a matter of difference between the two as given objects, but in their relation to the objective order. A dualistic assumption of two orders allows for such a difference while the principle of identity does not. Such a dualistic principle does not make consciousness a direct awareness of an external spatial order in the case of normal perception any more than in other cases. It simply assumes a corresponding identity of spatial character for normal perception. It is possible to make a distinction between normal and abnormal perception on this basis because the given object depends upon other varying conditions in the external order as well as on the object to which it corresponds.

Professor Drake's position is open to the objection of the combination of the two theories just pointed out. In the first place his criticism of pan-objectivism commits him to the logical implications of a dualistic position as I have endeavored to show. His whole theory of the datum as an essence which does not have objective existence also bears out the same conclusion.[2] Nevertheless, the account of perception flatly asserts that in veridical perception the datum is identical with or coincides with the object in external space, thus implying a different conception of the nature of consciousness in true and false perception.[3] The inconsistency in such a position is especially marked because the theory of the datum distinctly denies any objective spatial existence for the same. The alleged identity of datum and external object in the case of veridical perception can not be a matter of identity of existence for such a dualistic position. It can only be a matter of correspondence or identity of spatial structure in two orders of spatial existence. One is a self-existing spatial order. The other is a given spatial object and order which does not exist in external space at all. By external space is meant,

[2] *Ibid.*, p. 9.
[3] *Ibid.*, pp. 7, 50, 54.

not out in space, but outside of consciousness and the given order. The epistemological relation of perceived and external object can not be a matter of actual identity without also assuming an ontological relation of identity of existence.

The only logical solution of the ontological relation between the datum and objective reality is to give to each a nature which is consistent with its function in experience, without giving it the status belonging to the other. The datum must be a given existence which has no objective existence. The objective world must have an independent self-existence which can not be given in consciousness. It is not possible logically to attribute the character of either order to the other without assuming the relation of identity between the two and making consciousness a direct awareness of the objective order, and so giving the datum both a merely given and an objective existence, also making consciousness an intuition of both a mere datum and an objective reality. A dualistic position can only give it the former character, as we have seen. The whole problem is a matter of interpreting the status of space in terms of the principle of identity in difference. The relation between the two orders is spatial in both aspects of identity and difference. The identity between the two is a matter of correspondence of the internal spatial structure of each order, but there is also an ultimate difference in the spatial status of the two which is a matter of dependence, but can not be defined as a spatial relation, spatial relations being those which hold within each order. There is no one spatial relation including both. Any combination theory necessarily confuses these orders and attempts to reduce one spatial order to the other.

Although Professor Drake rejects the identification of the perceived object with objective reality, he, nevertheless, attempts to uphold a monistic theory which makes the perceived object and the objective world belong to the same spatial order. Instead of making the perceived object identical with the objective order as perceived, this theory makes it a derivation from the objective order. The theory has two aspects corresponding to the two functions of experience. One aspect sets forth a theory of the perceived object as the datum of experience which will make it a derivation from the objective spatial order; the other aspect consists of an explanation which claims to show how such a derivation can occur. The datum is given the status of an essence. An essence does not exist in the external order or in the given conscious order. It does not exist at all, but has merely the status of an ideal existence for thought. The conception of the perceived object as an essence thus gives it the derivative status required by the theory. The derivation is accounted for by the theory of what constitutes an ontological explana-

tion which regards the perceived object as a projection of an inner event, and imputation of existence to it at a point out in objective space where it does not really exist.[4] Because the perceived object is only an imputed existence it is not a real existence in space, but an essence or existence attributed to space by the mind.[5] It is only a projection of an inner event which is a real existence in space, not out where it is perceived, but in the brain.[6] Such an explanation thus professes to show how the perceived object is a derivation from the objective spatial order.

The difficulty with the explanation of the perceived object as a derivation from the external spatial order is that it is a combination theory requiring consciousness to be an awareness of both an external order and a merely given object. The alleged derivation must be either a conscious process or an ontological process outside of consciousness. Neither process alone will accomplish the purpose because the relation in question involves both the external order and the given conscious order. The derivation can not be a conscious process because consciousness can only derive an object from what is given to it as datum. It can not derive its datum. The problem of accounting for the existence of the datum is an ontological problem. Consciousness can only account for it by assuming an objective order of existence as its ground. The only existential relation that it can assign to the two is the causal relation implied in the assumption of an external order. Consciousness can not derive the given object from the external order or reduce it to the status of the external order because the existence of the given order is presupposed in the assumption of an external order to account for it.

The fundamental difficulty with any combination theory which seeks to give the immediate object of perception a separate status from objective reality, yet account for it as belonging to the objective order, consists in confusing the difference in character which must be attributed to the two in order to make the distinction. The conception of the perceived object or datum of experience as an essence confuses the spatial character of a given spatial order with that of the external order. The doctrine denies that the perceived object has existence in the external spatial order, but instead of regarding the object as a given object in a given spatial order directly perceived as given, it regards the same as an appearance in the external order which is not a real existence there, but only an imputed or projected existence.[7] The mistake is in defining the datum in terms of the status of a postulated objective spatial exis-

[4] *Ibid.*, pp. 26, 68, 71, 142.
[5] *Ibid.*, pp. 77, 161.
[6] *Ibid.*, p. 26.
[7] *Ibid.*, pp. 134, 142.

tence instead of giving it the quite different status of an immediate experience.[8] This confusion of the status of the datum arises because the immediately given aspect of the perceived object is mistaken for the assumption of objective existence for the perceived object which normally characterizes perception. It is only this attribution of objective spatial existence to the perceived object that has the character of an essence or existence imputed by thought. Critical method must distinguish the latter as a postulated existence from the immediately given aspect of the object. The doctrine of essence, however, assigns to the given object itself the status of an objective existence postulated by thought instead of giving it the status of an immediately given datum which enables thought to make the postulation. It is not the immediately given spatial object that is postulated by thought and which thus has the status of an essence, but the assumption of an objective and independent existence for the same. It is the assumed objective spatial order and not the given one that is a postulate. The latter must be directly given in order that experience may have a spatial character at all.[9]

The confusion of the given spatial order with an objective spatial order, and the consequent conception of the datum of experience as an essence, results in a reversal of the two functions of experience. The perceived object, which the author admits to be the immediate and certain aspect of experience, is given the status of an essence or ideal object of thought which is not immediately given in sense experience, but presupposes such as a datum from which it is derived.[10] This is exactly the result which the confusion of the datum with an essence leads to in Professor Drake's theory. The perceived object is taken as derived from a more immediately given datum. Thus, we have a complete reversal of the function of datum and essence in experience. The immediately perceived aspect of experience is given the status of a postulated object of thought and the real function of a datum is assigned to an alleged datum which is not immediately given in consciousness, but assumed as necessary in order that perception may take place.[11] Such an interpretation of the status and relation of the two functions of experience is untenable because of the contradiction involved in assigning to the datum of experience any other status than that of an immediately given existence. The reason it is self-contradictory to attribute the status of an essence to the datum is because the former is a postulated object which presupposes the reality of the datum or given existence as the basis of the postulate. The result of the confusion of

[8] *Ibid.*, pp. 8, 31, 132.
[9] *Ibid.*, p. 134.
[10] *Ibid.*, p. 134.
[11] *Ibid.*, p. 63.

the datum with an essence is to leave experience without any datum at all, for the immediately perceived content is the only material which can function as a datum in experience. The datum presupposed by the essence theory is only an assumption. Therefore, it also has the status of an essence in experience.

The assignment of the status of an essence to the perceived object does not necessarily signify that Professor Drake intends to identify the function of datum and essence. On the contrary, the doctrine really implies the function and relation of essence and datum as already set forth in the exposition of the critical method. The reason for giving the perceived object the status of an essence is to show that it has the derivative character belonging to the latter. The position, therefore, really implies that it is necessary for experience to have a datum which is an immediately given existence and not derived from anything else.[12]

The confusion of the given and external spatial orders also results in viewing perception as a relation between objects in the external spatial order instead of as a direct awareness of a given spatial object.[13] Such a conception of perception follows as a necessary step in the argument by which Professor Drake attempts to show that the perceived object or datum is an essence derived from a real existence in the brain. Because the perceived object is given the status of an essence it is necessary to regard perception as a process of deriving the same from a datum immediately given. The theory of derivation requires that this datum be a real existence in space. Perception is thus explained as the projection of a real existence in the brain out into space and imputing existence to it there. This position is untenable because perception can not be taken either as a thought process or a projection in space. It can not have the character of a thought process because there is no other conscious datum from which the perceived object can be derived. Neither can it be a projection in space because the projection would have to be ideal and not real. Otherwise the projected object would have a real existence where projected.[14]

The relation of a datum to its objective ground of existence is an ontological, not a conscious, process. The conception of perception as a projection of inner states attempts to define this ontological relation between the two orders as a conscious process taking place in the given order. It would give the perceived object an ideal status rather than that of an existence in the external order, yet it would make its relation to the external order, at once a conscious relation in the given order and a spatial relation in the external

[12] *Ibid.*, p. 7.
[13] *Ibid.*, p. 10.
[14] *Ibid.*, p. 18.

order.[15] The fact is that the relation can be neither. It is not a conscious, but an ontological or non-conscious relation. Neither is it a spatial relation in the external order because the perceived object does not exist in the external order. It has an existence in the given order, but the relation of the given order, or objects in it, to the objective order is not a spatial relation of the type holding between the objects in the external order. The relation is a unique causal relation.

The whole conception of perception as a projection of inner states and attribution of existence to them at another point in space is a mistaken ontological explanation of the nature of perception arising from the confusion of the given nature of the conscious order with spatial distinctions in the external order. The confusion consists in an attempt to regard perception as analogous to the relation between the brain and the object outside it in space. Assuming a corresponding spatial structure in the two orders, the theory attempts to make perception a relation of an inner state and the perceived object, and completes the identification by making the inner event an existent in the external order.[16] The fundamental mistake in this confusion of the two orders is in supposing that perception is a spatial relation in the given order. The given order contains spatial relations between objects in it, but there is no relation of this kind between consciousness and its objects. Given objects occupy the position in the given order in which they are perceived. They are not conceived first in one part and then projected into another.[17] Perception is a direct awareness of the given order. The given spatial order exists for consciousness, but consciousness is not a process in space nor a relation between objects in space either given or external.[18] The conception of consciousness as a relation between objects is a confusion of the same as a given process with the dependence of the nature of the perceived object on relations between the brain as an immediate condition and the real cause.

Another confusion necessary for the theory of derivation is the identification of an inner event as an implied datum with the objective order.[19] The concept of the perceived object as an essence presupposes such a datum because an essence is an ideal content or object which requires a given object as datum. The fatal difficulty with the conception of the perceived object as an essence derived from such a datum is that the alleged datum is not an actual datum

[15] *Ibid.*, p. 142.
[16] *Ibid.*, p. 144.
[17] *Ibid.*, p. 134.
[18] *Ibid.*, p. 175.
[19] *Ibid.*, pp. 73, 79.

given in consciousness, but an assumption made to account for the perception.[20] A datum must be a content in consciousness in order to function as a datum for thought. The alleged datum is not a conscious datum at all. It has the status of existence in the external order because it is not in the given order.

The real trouble with the confusion of the nature of the two orders in the case of the inner state lies in assuming that the conscious order contains an object corresponding to a brain event, whereas the conscious order never contains an object corresponding to a brain event. Although Professor Drake's theory requires that the inner event be at once an existence in space and a datum of consciousness, the conscious order always contains contents which correspond to something external to the brain event. The function of the brain is to serve as the immediate physical condition of a consciousness of a given order corresponding to such aspects of the spatial order as can act upon the brain state through a sense organ or nerve to produce a datum in consciousness. The brain state is always a means. It never produces a datum of itself. The whole fallacy with the notion of perception as the projection of an inner event lies in confusing the nature of the given order in consciousness with its physical conditions in the external order. The inner state is the cause of the given order, but it is not the datum of consciousness.

The whole attempt to avoid direct realism, yet make consciousness directly aware of another point in the external order as a datum, involves a misconception of the nature and function of consciousness. The combination theory requires that we substitute a causal theory of consciousness for direct realism which regards consciousness as a direct awareness of an external spatial order. The essential conditions of such a theory are that the brain as an immediate condition should serve to reproduce the structure of the external order in consciousness and not its own physical nature, which would defeat the purpose of consciousness. The attempt to interpret the datum in ontological terms leads to a conception of consciousness as an ontological process, using a physical event outside of consciousness as a datum to perceive a given spatial order. That is just the difficulty in confusing the two orders. Consciousness is not an ontological process producing its own datum. The datum is given in consciousness and produced by ontological conditions outside of consciousness which are physical.

Professor Drake has undertaken to account for the perception of objects by establishing a continuity of existence in space between the perceived object and real existence in the external spatial order.

[20] *Ibid.*, p. 63.

Since he holds that the object, as perceived, does not have the status of an existence in space, he is confronted with the problem of showing how such an object can be continuous with existence in space. This can be done only by making the connection a conscious process. Consciousness is assumed to be aware of a brain event as a real existence and to project the same out in space as an essence which does not have real existence there. The difficulty with this theory is that consciousness is not aware of brain states. Therefore, the alleged projection of the same can not be a conscious process. Neither can it be a physical process, for that would make the perceived object a real existence in space.

In order to overcome the difficulty, Professor Drake assumes the existence of mental states in the brain.[21] The assumption, however, does not overcome the difficulty because the theory requires that there be a projection of a real existence given in consciousness. The assumed mental states are no more conscious than brain states.[22] They are existences in space the same as brain processes and the function attributed to them is not a conscious function but an ontological, or non-conscious function, the same as that of brain states.[23] Therefore the assumption of mental states is unnecessary because their function is already performed by brain states, while the alleged projection of real existences in space to become the datum of consciousness remains unaccounted for.

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PURPOSE IN THE DOCTRINE OF CONTRADICTION

MECHANISM and purpose may be likened to characters in melodrama. The former is the cruel villain, the latter the innocent victim. And even the best of philosophers entertain the pious hope that the victim may make her escape.

Mechanism is just the scientific postulate of causality plus the assumption that cause and effect are external to each other. Taken in this sense it is a hard antagonist to meet: causality can not be denied, and cause and effect are in one aspect independent existences external to each other. But purpose is no less insistent: it is observed in the organism, to say the least.

We now have both mechanism and purpose on our hands, both demonstrable and each incompatible with the other. What shall be done with them? One thing to do is to treat the material world as

[21] *Ibid.*, 58, 81.
[22] *Ibid.*, p. 59.
[23] *Ibid.*, pp. 71, 97.

unreal. Bergson says that matter is created only when the creative current is interrupted,[1] that complexity and extension represent nothing positive.[2] To H. Wildon Carr, matter instead of being a positive thing is attained by diminution. It is a dead shell which life casts off.[3] Boodin claims that matter and mind are not mere abstractions, but he is careful to insist that they do not exist in isolation.[4] The universe as a whole is for him an organism or super-organism.[5] And the whole is dominated by creative genius.[6] But these solutions merely beg the question. Suppose, as the new realists, for instance, claim, that any knowing at all implies an independent object to be known; in other words, suppose that the worst is true and the world exists. Then the problem of how purpose attaches to matter would supervene.

Another way of handling the problem is that of the vitalist. The vitalist admits that matter exists, but insists on the equal reality of his vital spark or his entelechy. The question is, how does he conceive an entelechy. Driesch informs us that it lacks all the characteristics of quantity, that it is order of relation and absolutely nothing else, that it is not a kind of energy.[7] But when he has made this point he goes on further to maintain that entelechy may "suspend" becoming.[8] If it can "suspend" becoming it is a kind of energy figuring within the physical-chemical situation and is different from physical and chemical factors only in so far as it is conceived to come trailing clouds of glory from a supersensible world. In introducing an energy *ab extra* he is leaving the problem exactly where he found it.

Recently certain physicists have been understood to intimate that when it comes to quantum phenomena the rule of physical determination does not hold. Here, it seems to many, is the coveted source of an irrational spontaneity. If at the heart of things there is this contingency, it may well be that all physical laws are only instances of "statistical regularity." It may be that groups of human beings can manifest this regularity as groups and the individuals at the same time remain free. It may be possible, according to this view, to fall through the meshes of natural and social law into a deep well of liberty. Over this discovery there has been great rejoicing among the angels—the innocent victim has seemed

[1] Bergson, *Creative Evolution*, Mitchell's translation, pp. 239, 245.

[2] *Ibid.*, p. 209.

[3] H. Wildon Carr, *A Theory of Monads*, p. 310.

[4] John E. Boodin, *Cosmic Evolution*, p. 128.

[5] *Ibid.*, p. 35.

[6] *Ibid.*, p. 33.

[7] Hans Driesch, *The Science and Philosophy of the Organism*, Second Series, p. 169.

[8] *Ibid.*, pp. 178–179.

to escape the villain. But the essence of this doctrine is in its first phase the assumption that mere contingency is ultimate and in its second phase that mechanism can be reduced to a probabilistic basis. These assumptions should be subjected to severe metaphysical analysis to learn if they are true and, if so, in what precise sense. The outlook in this direction is not hopeful.

Among the solutions of the problem, that of the emergent evolutionists must be considered. Lloyd Morgan does not deny the existence of nature; in fact he is careful to insist that his principle is every whit as true of the atom, the molecule, and the crystal as of the organism.[9] Nor does he try to introduce purpose *ab extra* as an interfering energy.[10] Nor does he try to locate freedom in the heart of the atom. He is careful to state that purpose is a bracketing of a sequence, that it is an interpenetration of first and last, that it is, in short, an immanent unity. He even goes so far as to say that the Divine Purpose is a limiting concept for which finite purpose may reach, but which it can never grasp.[11] But he leaves us wishing that he had developed the idea of limiting concepts further, making explicit the logic of the approach to such concepts and treating their ontological significance. As it is, he leaves purpose and mechanism merely in contingent relations to each other with only a hint of a solution.

II

In attacking the problem it must be frankly admitted that, anywhere short of limiting concepts, all things stand in relation; in fact even limiting concepts, from one angle, stand in relations. The new, empirically determined discontinuities that are astounding science, the pulses of energy, the quanta, the biological rhythms, the convergences of complementary characteristics, the mutations, though they are all usually accepted as naïvely as a child's playthings, are no exception to the rule. We are not driven, then, to the necessity of designating our discontinuities by the mystic word "Om" and swooning away into contemplative rapture. Relatedness is a necessary postulate of an intelligible world; it holds true, in some modified sense, within the atom and within the choirs of the angels.

But, granted this universal relatedness, what does it mean? Does merely standing in relations subject things to the causal system? Common sense would be skeptical about relations as such being causal. It has also been assumed in the interest of a realistic

[9] C. Lloyd Morgan, *Life, Mind, and Spirit*, pp. 66, 76–7.
[10] *Ibid.*, p. 283.
[11] *Ibid.*, p. 286.

epistemology that there are relations that do not make a difference in their terms, especially the relation of being known.[12] But if it be found that relations as relations necessarily make a difference in the things related, a better epistemology must be devised.

There can be little doubt that no relations within the knowing situation, except at the limiting concept of meaninglessness, are indifferent—this is a matter for psychological determination. In the world of chemistry, catalytic agents are so well known that it would be easy for a metaphysical chemist to generalize the principle and find every chemical circumstance and every other existent or subsistent in the world in some faint sense catalytic. In the physical system, with radio-activity and "cosmic rays," and with other influences just ready to stream over the horizon, it is increasingly difficult to assume that any conceivable relation is without effect. It appears then, quite apart from *a priori* reasoning, that the case for universal interaction is overwhelming. To set up indifference now is an extremely doubtful undertaking. Furthermore, on more distinctively metaphysical grounds, if a relation were completely indifferent to its terms it could be clapped fantastically, irresponsibly, demoniacally on any terms whatever. But this is not possible. Actual relations and their terms are accordingly connected inextricably with each other. Thus every term becomes a cause.

At this point a further implication must be faced. Whatever may be said later for the internality of causes and effects to each other, it must be admitted candidly that not only can they be separated for methodological purposes, but that they also exist in their own right apart from each other. If they do not exist in their own right there is nothing to relate and the relation collapses. But, if we assume causes to exist external to the effects, they bring about the effects by impulsion and we have the mechanical system which is causing all the trouble. Every event, mental or physical, is determined by a limitless set of causes external to itself. This is mechanism with a vengeance. If this be true what shall be done for purpose? There is no "as if," there is no smoke screen, there is no gauzy film of illusion to protect her from the villain.

III

Let us now view the matter with equal candor from the other side. In purpose a later event in some way determines an earlier event by contemporaneity or identity with it. Does mechanism itself suggest such a drawing together of cause and effect?

One way to approach the question is by an analysis of causal

[12] E. G. Spaulding, *New Rationalism*, pp. 84–86.

analysis. Event *A* occurs. With more or less analysis as the case may demand, *B* is hit upon as the uniform antecedent. On further analysis a new aspect of *A* is traced to event *C*. Still further analysis brings out a third aspect of *A* which is traced to event *D*. And the analysis of *A* and the determination of the causes of its various aspects may continue indefinitely.

But every mechanical system implies a goal at which every cause and every effect would be perfectly determined. At this goal or conceptual limit the effect becomes a cause of the cause. The empirical sequence of cause and effect is admittedly temporal. From this viewpoint the beginning and the end of each are definite. One billiard ball hits another with a sharp click and the second ball shoots across the table. But further study progressively transforms the situation. The cause and effect become parts or aspects of systems that are always operative on each other; there is no moment of sharp contact between them; the effect as affected by the cause is at any moment that may be selected already acting as a cause upon the cause. As the moment of action is divided the reciprocal influences become more nearly simultaneous. At the conceptual limit of division cause and effect are reciprocally and timelessly active on each other, and interaction thus becomes "field."

We have spoken so frequently of limiting concepts that it is a pertinent question at this point whether such a concept is a mere figment of the fancy or a real part of the world. Light may be thrown upon the question by considering what is meant by the reality of ordinary objects. Does their reality consist of solid kernels or nuclei concealed within them? If that position is assumed, the kernels or nuclei seem to imply deeper kernels or nuclei and they in turn still deeper essences, until the question arises whether we mean kernels or nuclei at all or an ever retreating meaning. If the possibility of new meanings were not forever ahead of us we should punch through into nothingness—reality would evaporate. The limiting concept is an attempt to grasp the ontological significance of this infinite retreat.

"Field" as a limiting concept has this ontological significance. It is suggested that the intention and the end to be realized, or the earlier and the later event, now join hands in this ontological goal. At infinity causation turns thus inside-out and becomes something akin to purpose, extension becomes intension; or, as A. H. Lloyd intimated a number of years ago, infinity is an innuendo for another dimension.[13] We have here an intimation at any rate of purpose growing out of mechanism. The villain thus promises at infinity to marry the girl.

[13] A. H. Lloyd, *The Logic of Antithesis*, this JOURNAL, *Vol. VIII, No. 11*, p. 288.

Let us now approach the question from another angle. What happens to *A* in this process of determining its causes? Does it retain its virginal and mechanical innocence or is it being seduced and contaminated by internal relations? To attempt to answer this question we must turn our attention again to the nature of relations. Not only do terms stand apart, from one angle, in a mechanical system, but relations at the same time *relate*. All relations may be conceived for our present purpose as lying somewhere between the limiting concept of the one-to-one identity of an event with itself and the limiting concept of complete otherness. In short, all relations are dilutions of one-to-one identity. Causation as ordinarily conceived differs from other relations only in being less diluted. The sense of compulsion that is felt in the relation of cause and effect is the sense of the identity of the first term persisting through the ensuing changes. Thus when *A* is progressively correlated with its antecedents it is progressively identified with them. As the identification proceeds *A* becomes less contingent and more a part of the things around it.

As soon as this principle is admitted we have, of course, a measure of identity of earlier and later events which is of the nature of purpose, but inasmuch as general purpose is usually the bone of contention, it may be well to exhibit its implicit nature by carrying the process to its logical limit. The limit of this development comes when there is no aspect of *A* that remains unexplained, that is to say, when there is no aspect of *A* left contingent. That means the complete identification of the event with its antecedents. As this goal can never appear in the temporal sequence, it is an ideal limit.

The question now is whether the antecedents with which *A* is being progressively identified constitute a flat level or a system. The set of antecedents would seem to be a system instead of such a level in that the various events with which the several aspects of *A* are progressively correlated are not all bound up in one term, but are different events having differing relations among themselves and to the world in general. Furthermore, event *A*, though tied by threads of identity with its several antecedents, yet remains only partially assimilated so far as any one antecedent is concerned. Event *A* would thus, instead of being collapsed into its abstract beginnings, be adopted into a family of causes, that is to say, into a social or an organic whole.

IV

We now have on our hands as the necessary implication of terms and relations a mechanical system which gives a hint of purpose at its limiting concept and a system of internal relations which develops into an organic whole at its limiting concept. Shall we abandon

either and dogmatically or sentimentally assert the exclusive reality of the other? The contention here presented is that both sides should be retained in their profoundest ontological significance as necessary parts of the total relativistic situation. Mechanism and purpose flow with equal necessity from our doctrine of terms and relations.

What we have is neither purpose introduced *ab extra* nor purpose in an idealistic world fixed up for it. But things go as they go and purpose and mechanism, disentropy and entropy, God and the Devil, are among the inevitable implications of their going. And every lusty citizen should have faith in this whole pantheon of gods and demigods.

It might easily be charged that this is only a diguised absolute idealism. Exponents of the latter doctrine may start out in the same way to insist upon the interrelatedness of things and to develop the implication of complete organization or complete ground. But the difference is this: absolute idealism exalts complete ground to be the sole reality, the unique things of naïve realism are sunk without a trace in the absolute, ultimate contradiction is taboo; whereas the theory here presented insists upon the reality of complete ground, but at the same time stresses with equal force the reality of discrete things, letting them stand in violent contradiction to complete ground which is their implication. From this latter viewpoint naïvely accepted things, with all their implications of complete mechanism, are the limiting case in one direction and complete ground the limiting case in the other, no desperate effort being made to keep all things within a non-contradictory whole and then by hook or crook to maintain their individual characters.

It might also be easy to confuse this doctrine with that of new realism. New realism has, indeed, offered much to assist in maintaining this position. The difference, however, lies here: though new realism is much more hospitable to thorough-going contradiction than is absolute idealism, it does not accept it as universal; it puts conflicting terms in estranged universes; to put the issue in a nut shell, it does not admit the Herakleitean conflict. This doctrine, on the contrary, accepts the *A*-not-*A* formula as representative of all actual things. It can, therefore, take things as existing in their own right, as being free, as being determined by antecedents, as being parts of mechanistic systems, as being at the same time purposed within complete ground. It can, in short, let contradiction do its worst.

There are vitality and cleanliness in contradiction. When many philosophers would lie down in the bosom of deity, or even find freedom in the chinks of the causal system, there is hope in the

doctrine of the intellectually hardbitten Herakleitos. The advantage of a doctrine of conflict is that it allows scientific determinism and purpose to come to terms without stultification.

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BOOK REVIEWS

Réalité et Relativité. GASTON RABEAU. Paris, Marcel Rivière. 1927. Pp. vii + 282.

This study of M. Rabeau serves two purposes: first, that of criticizing contemporary "relativism"; second, that of showing how a Thomist could meet the legitimate criticism of the "relativists."

By "relativism," M. Rabeau means what has become almost endemic in European philosophy, namely, the shift from substance to function, from concepts to judgments, from facts to intuitions. The relationship between these three shifts is logical enough. Having first dissolved substance into functions, one must find an adequate means of expressing them. This means is found in judgments. But now arises the question of what one is judging. Substantialism had answered, Facts; relativism answers, Intuitions. For facts are the epistemological counterpart of substances; whereas intuitions are the counterpart of functions. It is clear that M. Rabeau is studying here an aspect of the reorientation of modern thought from eleaticism to heracleiteanism, the rehabilitation of change and multiplicity, and the disgrace of permanence and unity. It is part of what Mr. Wyndham Lewis calls the "time-cult."

As typical of functionalism, M. Rabeau chooses Cassirer and presents his readers with a careful and detailed exposition of *Substanzbegriff und Funktionsbegriff* and of *Das Erkenntnisproblem.* It is obvious that the fundamental premise of this type of philosophy would be intolerable to a Thomist; the premise, namely, that the categories are not fixed forms of the mind, but "living motives of thoughts, 'which pass through the multiplicity of its particular forms and realize themselves in the creation and formation of ever new categories.'" This in turn rests upon the equally intolerable postulate, that the logical value of ideas is uniquely constituted by the use which the mind makes of them and is in no way an intrinsic property, recognized but not created by the mind. The basis of M. Rabeau's criticism is that this functional interpretation of knowledge involves an infinite regress. For functions are expressed as functions *of* something, which something in turn must be a function of something, and so on *ad indefinitum.* There seems to the critic only one

way out of the difficulty, to wit, the existence of an Object (substance) "*qui serait complètement déterminable par des principes*" (p. 59). The existence of such an Object depends upon the relation of human knowledge to reality. If knowledge represents nothing beyond itself, then M. Rabeau thinks one would land in nihilism, in which language and science would be meaningless. If they are to have meaning, then there must somewhere be an unconditioned Being for them to mean.

The representative of the shift from concepts to judgments is M. Brunschvicg. After having converted things into systems of relations, the mental substitute for the thing (the concept) had to be converted into a system of judgments (p. 62). The intellect no longer sees, it binds together. What it binds together are intuitions. The postulates of this theory, according to M. Rabeau, are as follows:

(1) Judgments are prior to concepts both in the temporal order and in the ideal order of thought.

(2) Concepts are obtained only by the dissection (*démembrement*) of judgments and can not exist in isolation.

(3) Concepts therefore have meaning only through the judgments which determine them. Some of these judgments are basic, i.e., logically primitive, but are not therefore held to be true. What is true is their implications.

(4) The mind must be left free and spontaneous, unlimited by finite data. It must give up analysis, which ends in the elements (sensa), synthesis which ends in the completed whole (abstractions), for relating which can presumably go on forever.

These postulates are needed to account for relations. In reply to them, M. Rabeau attempts to show (p. 71) that the theory of concepts implies a knowledge of relations and does not prevent the mind's infinite progress; that on the other hand the theory of the absolute primacy of judgments is forced to admit (*a*) in judgment "the perception of a universal objective reality," (*b*) in reasoning "a necessary linkage which exists not only among the operations of the mind, but among the objects to which the mind applies its own operations" (p. 72).

The concept for Saint Thomas has three aspects (*Ib.*). It is that which one understands, that by which one understands, and the process of understanding. But each of these meanings requires relations. The object of understanding is the *habitudines* of things, necessary relations found in things because of the nature of space, or time, or matter, and the like. The means of understanding can *a priori* be seen to be relational, since a means is always relative to some end. The process of understanding is necessitated by our in-

ability to intuit the essential nature of things; we mount step by step; "thought is a dynamic process which one can never say is completely finished" (p. 76). But a dynamic process can not be realized without relations. Hence the Thomistic theory of concepts does not eliminate, but requires relations.

It is questionable whether M. Rabeau is here aiming at the right target. Do the anti-conceptualists maintain that Saint Thomas does not utilize relations, that his theory ought not to utilize relations, that his theory can not explain relations, or that we comprehend things by their relations and not by their inner essence? It is clear that if thought is a grouping of essences which swim in and out of consciousness, identical with that of which they are the essences, there could be no such thing as relations. But not only did Saint Thomas never hold such a view, but no one ever suspected him or any other epistemological dualist of holding it. The question is rather one of fact, namely, how do we comprehend things, by essences or by "relations"? And what that question really means is, Have things an eternal unchangeable essence inherent in them by which they are known, or have they specific characteristics which vary according to their relations to other things? Does the concept "horse" indicate the presence of "equinity" which theoretically, i.e., by God, could be comprehended in isolation from all other things, or does it denote a system of relations? The second alternative does not mean, Is a horse's essence known by or constituted by its or the horse's relation to other things? Nor does it mean, Is the horse a system of relations? It means simply, Is the horse known by its relations to other things? The functionalist seems to say, Yes; the conceptualist, No. This in spite of the fact that Saint Thomas's theory of concepts necessitated the existence of relations, since for some minds—and presumably for human minds, essentially if not accidentally—there is an essence, *equinity,* which can be contemplated much as one contemplates a color.

That conceptualism assures the mind's freedom need not concern us here, as I have but the haziest idea of what the mind's freedom consists in or why it is important or why the bestowal of it should make a theory true or false.

That the theory of judgments implies the perception of a universal objective reality is more important. M. Rabeau's first argument is drawn from inductive generalization. When we unite in a single concept the similarities of a number of instances, is the resultant concept simply "an operation of thought which joins together the predicates of different subjects?" (p. 105). Again, when we conceive of an irrational number, do we not try to explain it as

a new kind of number, by some theory such as that of "cuts" in the series of real numbers, to give it an intrinsic meaning and not simply to attribute to the new symbol the possibility of being added to, subtracted from, and so forth? The reply to these questions is that the meaning of these concepts is, to be sure, not determined by the judgments which affirm them, but by anterior judgments, "jugements virtuels" in the words of M. Goblot. These judgments correspond to the primitive propositions in a logical system and, M. Rabeau seems to think, can be traced back to a set of really primitive propositions, *absolument premiers dans l'ordre de la pensée ou dans l'ordre de l'être* (p. 109). Are we to say that these basic principles mean nothing beyond themselves? Are they simply images? Are they dependent upon the exercise of the Kantian categories and are thus without transcendent reference? No, M. Rabeau concludes, we "mean" something by them when we assert them. When we say, "p is equivalent to q means p implies q and q implies p," we mean that real propositions are thus characterized and not merely that "we think they are."

One must distinguish between what we think and what we ought to think. It is true that common sense backs up the epistemological dualist in assuming that propositions denote something not themselves. And it would be difficult, if not impossible, to indicate an essential difference between the ontological status of day dreams and science (to say nothing of illusions and veridical perception), if our primitive ideas were not true *of* something. But at the same time, the proposition that they are true of something does not tell us what they are true of. Moreover, since a given proposition may be implied by several propositions (some of which must be false), one is never sure that the premises discovered by logical analysis are either the only possible premises or are even true. There is, therefore, more reason than appears from M. Rabeau's discussion for maintaining that they have an esthetic rather than a metaphysical value, rounding out a theory, but not necessarily describing a world. Consequently one is in the position of asserting the existence of unknown things in themselves or even of an Unknowable, if one relies on their existential implication to found a universe.

The same criticism which destroyed substance in the objective world and concepts in the intelligible, now sets to work to destroy facts in the empirical world. Sociological and social facts, physical facts, historical facts, psychological facts, all disappear into correlations and extensions of moving, restless intuitions. Facts become subjective constructs. Scientific experimentation is replaced by intuition. But intuition is "rigorously personal, incommunicable by discourse, and, in fact, in so far as it is knowledge, it is inacces-

sible'' (p. 200). But, says M. Rabeau, in observing our inner life, we shall discover in it an empirical discontinuity: psychological facts. These psychological facts, once analysed, will appear to be ''acts'' meeting things or substances. The analysis of their meeting —action and passion—will reveal the external fact. Finally, both internal and external facts will be posited as realities which human action lives upon. ''After having recognized the reality, the objective independent unity of the psychological and historical fact, perhaps we shall be able to restore reality to the historical and even to the social fact'' (p. 202).

This traces the program of the last third of M. Rabeau's instructive study. It will perhaps suffice to suggest the general tenor of his argument. We can not hope to do more than that here, for his reasoning is so compact that to abridge it would be hopelessly to deform it.

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Die Axiome der Euklideschen Geometrie. EMIL BERGFELD. Neue Psychologische Studien. Bd. III, Heft 2. München: C. H. Beck'sche Verlagsbuchhandlung. 1927. Pp. 91.

Zur Syllogistik. FRIEDERICH WEIDAUER. Neue Psychologische Studien. Bd. III, Heft 4. München: C. H. Beck'sche Verlagsbuchhandlung. 1928. Pp. 204.

The impasse to which classical association theories lead, has compelled modern psychology to renounce the atomism implicit in those doctrines. Newer tendencies emphasize ''wholes'' or integrated situations of various kinds as points of departure for study. The monographs under notice are two of a series edited by Felix Krueger, director of the Leipzig Psychological Laboratory, a proponent of an organic point of view in psychology, although a critic of the *Gestalt* movement in some of its forms. The chief contributions of the Krueger school to contemporary discussion seem to be the recognition of at least two kinds of wholes: simultaneous-complexes in which the totality is experienced in its unitary flavor *together with* the disposition of its parts; and successive-complexes, in which the whole is experienced as a unity but its parts are discovered successively, not *with* the whole although *within* it. There is a further recognition of certain psychic constants, habituations, which, however, have to be taken genetically. The two studies here considered are presumably applications of these views to strictly philosophical questions, although after making formal acknowledgments of indebtedness to Krueger their chief borrowing seems to be the epistemology traceable to Kant.

For Bergfeld, whatever is given in knowledge is given immediately (and therefore certainly) only as a state of consciousness. And the Kantian affiliations of the school become evident when it is asserted that the axioms of geometry are intuitions valid for the subject only (p. 139). The task Bergfeld sets for himself is to discover the extent of the certainty of geometric axioms: in particular, of Hilbert's well-known set. An analysis is therefore proposed of the data of consciousness for criteria to judge the language, meaning, communicability, and generality of the axioms of geometry.

The major portion of the work is the setting up of a series of definitions and distinctions, in terms of which the problem is redefined. (1) A symbol, or set of symbols, is said to be self-evident, when in "experiencing" it, its meaning is "in consciousness" at the same time as the quality of the symbol. Thus the set of symbols "The figure is a triangle," is said to be self-evident, while "The figure is a chiligon" is only reflection-evident, since reflection upon the meaning of "chiligon" must first occur before the sentence acquires meaning (p. 145). This distinction is clearly valueless, for in so far as we *know* a symbol in its referential character, the symbol in its own right as a definite entity is *not* an object of knowledge. The correlation of certain qualities with meanings is a matter of skill, training, and end-in-view, so that distinctions based upon alleged immediacy of evidence are mythical. (2) The existence of other minds not as states of our own consciousness, is next inferred by analogy to our own behavior, although upon the nature of this analogy discreet silence is maintained (p. 154). Since only those meanings whose *expression* is identical with their meaning are held to be directly communicable, while in cases of symbolic representation of meanings communication is recognized as involving inference, the question of the communicableness of the axioms is raised. (3) Next, axioms are said to be necessary if, when certain elements are given, the connections between them are also given immediately and unconditionally; while axioms are empirical if such connections vary from instance to instance. Necessity is thus a function of intuition; it has apparently no foundation in the nature of the subject-matter. (4) We are said to know *a priori* when we experience a necessary synthesis of elements, although "experience" is required to analyze out the conditions of its possibility (p. 163). Of course, Bergfeld never questions his Kantian heritage, and modern work on the foundations of logic and geometry has left him secure in his orthodoxy.

With a complete disregard of the significance of practice and testing considerations of validity, if geometry is to be considered a branch of physics, Bergfeld finds that Hilbert's axioms fall into two

sections. Section *A* contains Groups 1 and 2, Section *B*, Groups 3 and 5. The axioms of Section *A* are a simultaneous-complex, self-evident, directly communicable, necessary, and *a priori;* the axioms of Section *B* are a successive-complex, reflection-evident, indirectly communicable, empirical, and *a posteriori.* Thus only the former are "axioms"—the latter are mere postulated conventions.

There is an appendix to prove that Hilbert's parallel postulate is not independent of the others. By defining parallel lines as equidistant, Bergfeld believes he has demonstrated that such lines exist and that the theorem for the angle sum of a triangle follows independently of a special axiom. The confusion here is great, for every mathematician knows that equidistance and parallelism are distinct ideas; and the notion of "same direction" as a definition of parallelism has long ago been shown circular. The error in the "proof" itself is a "howler" (p. 206).

Those who have believed with recent logicians that logic has made tremendous strides since Aristotle, may be shocked to learn that for Weidauer it is all a mistake, and that in fact (Kant's statement to the contrary notwithstanding) logic has retrogressed and has been led astray (p. 637). According to Weidauer, the subject-matter of the Aristotelian syllogism is valid *demonstration,* for which the truth of the premises is indispensable. Hence Aristotelian doctrine is the doctrine of the forms of *proof.* Post-Aristotelian syllogism, however, is not concerned with proof, but with the *inferability* of the conclusion from two premises, the demonstrative character of the relation being ignored. Hence for post-Aristotelian doctrines the truth of premises is of no account, and they are a consideration of the forms of inference as such (p. 449–50). Aristotelian logic is existential, recognizing as the single ground of inference the well-known *dictum;* while subsequent logics distinguish so-called categoric from hypothetical and disjunctive syllogisms, and destroy the simplicity of the science by offering a dozen or so different principles of inference to validate their procedure.

Weidauer thinks it is time to call a halt to this riot of doctrines and to write the prolegomena to every future logic. The *act* of infer*ring,* the mental aspect of conclud*ing,* is made central, and logic is taken as a branch of psychology. For, it is maintained, propositions are the content of the corresponding thought-acts of inference, and it is the same whether one says that a conclusion follows from the two premises or whether one says that from the consciousness whose content is the major and the consciousness whose content is the minor there results the consciousness whose content is the conclusion (pp. 451, 633). Why, on this reasoning, every science does not become a part of psychology, is not clear. Of the thought-act,

is predicated a unity; it is a successive-whole, having, however, a relative completeness; it requires, besides its logical aspects, an element of will, feeling; a condition of its existence is a non-phenomenal psychic structure (p. 476). Although the study of these psychic "dispositions" is to be socio-genetic, there is really never an escape from the narrowly conceived subjectivism which dominates the author's thought.

Weidauer recognizes sixteen forms of inference. He suggests no principle of derivation, and admits his tabulation to be incomplete. The forms fall into two groups. Group *A* is characterized by the fact that from two premises and by means of a verbally unformulated "insight," the conclusion follows. The form of insight is either: (*a*) the subject of the minor is found among those things thought of in the major; or (*b*) the subject of the minor corresponds to that which is thought of in the major. Group *B* is characterized by the fact that from two premises the conclusion follows *immediately* (466–67).

Weidauer has had a splendid opportunity to emphasize the mediate nature of all inference, the mediation occurring through a guiding principle which is the formulation of habits successful in dealing with specific subject-matter. The rôle of leading principles as Peirce used the term, has not been sufficiently emphasized nor its significance for logic made clear. As it is, by calling upon immediacy, self-evidence (so long ago disbarred in mathematics as vouchers for truth) to get us out of logical difficulties, Weidauer has remained faithful to the Cartesian-Kantian tradition so impotent to account for the fertility and self-corrective attitude of science. Some of his own examples make it difficult to see why Groups *A* and *B* are distinguished. The following syllogism belongs to Group *A*: (1) The moon passes through the earth's shadow this month; (2) If the moon passes through the earth's shadow an eclipse of the moon occurs; (3) An eclipse of the moon occurs this month. This inference is justified by Weidauer on the ground that what is thought of in (1) corresponds to the subject of (2) (p. 462). But the following is found in Group *B*: (1) The captain of Co. A is wounded; (2) The captain of Co. A is Captain Smith; (3) Captain Smith is wounded. This conclusion is justified as an *immediate* inference (p. 465). It is not obvious why the rule which was found essential in the first case can be dispensed with here.

The criticisms offered by Weidauer upon recent logicians are sketchy and full of misapprehensions. Russell's doctrine of logical intuition, for example, is interpreted as a sensory apprehension of spatial relations (p. 622). But perhaps the best index of the character of the work is that, although its set object is the reconstruction

of logic, of its 204 pages it devotes 25 to this task, 116 pages to a long summary and critique of the two Analytics of Aristotle, and 21 pages to excerpts with brief comments from more recent writers.

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Temps, espace, relativité. ANDRÉ METZ. Paris: Gabriel Beauchesne. 1928. Pp. 211.

The Theory of Relativity. LEONARD SIFF. N. Y.: Joseph Lawren. 1926. Pp. 46.

M. Metz' delightful little volume is in some sort a sequel to his polemical work on relativity, first published in 1923 (*La relativité*, Paris, Chiron). The present book sums up the results of discussions of the intervening years, but in the form of an elementary exposition of the theories of Einstein. The author addresses the cultivated public in general, and to that end studiously avoids the language of mathematics and introduces a number of very simple but helpful diagrams. Unlike most expositors of the subject he begins far enough back among the assumptions of common sense and the experiences of everyday life, and refrains sufficiently from elliptical modes of statement, to make his account really intelligible to his chosen audience. This resultant exposition is a model of clarity and precision. The interests of the philosophical reader, moreover, have been kept explicitly in view. M. Metz' own very interesting interpretation of the philosophical significance of the theory of relativity is of a decidedly realistic order. He refers in terms of the highest approbation to M. Meyerson's *La déduction relativiste;* and it appears that he has himself written an account of M. Meyerson's philosophy of science (*Une nouvelle philosophie des sciences, la Causalisme de M. E. Meyerson,* Paris, 1927). Towards M. Bergson's *Duré et simultanéité* he shows himself less complaisant; yet he nevertheless adopts some of M. Bergson's characteristic distinctions, e.g., that between qualitative or pure duration and physical duration, and that between two sorts of simultaneity. At a number of points his procedure brings to mind Professor Bridgman's conclusions concerning the "operational" nature of scientific concepts (*The Logic of Modern Physics,* Macmillan, 1927).

The fundamental nature of M. Metz' interpretation may perhaps be suggested by the following. The four-dimensional "space-time" of Minkowski is only an *ens rationis,* a mathematical abstraction. Time resists all attempts at complete assimilation to a spatial dimension. The order of events in time is fundamentally irreversible. "The movement of the instruments of measurement may, in certain circumstances, influence measurements of duration or of

length'' (and this is not merely ''a question of more or less fictitious representations arising in the minds of observers . . . as an effect of their imagination or of their calculations; it is solely a question of measures really registered by instruments''); ''but it is certain that it can not influence the intrinsic contexture of events. Events *are*—and that too independently of observers and methods of measurement—such is the metaphysical postulate implicitly involved in every physical investigation.''

In Mr. Siff's essay (written originally in 1921) we discern little virtue. It appears calculated neither to inform the uninstructed nor to advance the initiated. The non-scientific reader (to whom the volume seems nevertheless to be addressed) is treated decidedly *de haut en bas,* but his confidence is nevertheless not wholly inspired. He is baffled by hearing of ''Space in no sense real'' and ''Time a convenient fiction''; and he wonders why the theory of the relativists should ever have been invented at all if it were really the case that ''The fundamental contradiction induced by the Michelson-Morley experiment . . . could be resolved by the no more startling assumption than this, namely that . . . the ether simply did not exist'' (Cf. C. D. Broad, *Scientific Thought,* pp. 122–123).

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JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. LIII Année, Nos. 9 et 10. Correspondance entre Destutt de Tracy et Maine de Biran. Le problème sociologique du rire: *E. Dupréel.* Des lois régissant la variation de l'intensité sensorielle en fonction de l'intensité du stimulus: *H. Piéron.* Le pragmatism religieux. A propos de la ''Profession de foi du Vicaire Savoyard'': *A. Schinz.*

MIND. Vol. XXVII, No. 148. The Continuity of Space and Time: *C. A. Strong.* McTaggart's Determining Correspondence of Substance: a Refutation: *John Wisdom.* On McTaggart's Criticism of Proposition: *R. M. Blake.* Cook Wilson's View of the Origin of ''Judgment'': *Richard Robinson.* Discussions: Singular Propositions: *J. A. Chadwick.* Is There a Moral End?: *J. H. Muirhead.*

THE MONIST. Vol. XXXVIII, No. 4. The Search for Certainty: *L. P. Chamberś.* Neo-Pragmatism and the Ways of Knowing: *C. W. Morris.* A Personalistic Conception of Nature: *A. K. Majumdar.* Relativity in Logic: *Paul Weiss.* Egoism: *C. M. Attlee.* The Foundations of Adler's Ethical Philosophy: *Joseph Ratner.* Dewey's Theory of the Moral Good: *Paul Crissman.* The Idea of God in a Philosophy of Events: *W. F. Clarke.* Can Psychology Contribute to the Study of Linguistics? *J. R. Kantor.*

University of California Publications in Philosophy: The Problem of Truth. Berkeley: University of California Press. 1928. 263 pp.

Leary, Daniel Bell: Modern Psychology, Normal and Abnormal. Philadelphia: J. B. Lippincott Co. 1928. 441 pp. $4.00.

Litt, Theodor: Wissenschaft Bildung Weltanschauung. Leipzig: B. G. Teubner. 1928. vi + 136 pp. 4.20 M.

McKeon, Richard: The Philosophy of Spinoza. New York: Longmans, Green & Co. 1928. ix + 345 pp. $5.00.

Pavlov, Ivan P.: Lectures on Conditioned Reflexes. Twenty-five Years of Objective Study of the Higher Nervous Activity (Behaviour) of Animals. Translated from the Russian by W. Horsley Gantt, with the collaboration of G. Volborth. An Introduction by Walter B. Cannon. New York: International Publishers. 1928. 414 pp. $6.50.

Pratt, James B.: The Pilgrimage of Buddhism and a Buddhist Pilgrimage. New York: Macmillan Co. 1928. xii + 758 pp. $3.00.

Wallace, William K.: The Scientific World View. New York: Macmillan Co. 1928. ix + 316 pp. $3.00.

NOTES AND NEWS

The Twenty-eighth Annual Meeting of the Eastern Division of the American Philosophical Association will be held at the University of Pennsylvania, Philadelphia, Thursday to Saturday, December 27 to 29. Sessions are being arranged, with specially invited speakers, for discussion of topics in the Philosophy of Religion and in the Theory of Knowledge.

Dr. Harold A. Larrabee has been promoted from associate professor to full professor of philosophy at Union College.

Professor Joseph A. Leighton of Ohio State University is Visiting Professor of Philosophy at the University of Southern California for the year 1928–29. During the past summer session, he served as visiting professor at the University of California at Los Angeles.

The Heidelberg Academy announces that a new critical edition of the writings of Nicholas of Cusa is in preparation. Further information may be obtained from Professor Ernst Hoffmann, University of Heidelberg.